DIW Berlin

German Institute
for Economic Research

Discussion Papers

508

Tilman Brück*
Andreas Stephan**

Do Eurozone Countries Cheat with their Budget Deficit Forecasts?

Berlin, August 2005

* Corresponding author: Tilman Brück, tbrueck@diw.de
German Institute for Economic Research – DIW Berlin and Poverty Research Unit at Sussex (PRUS)

** European University Viadrina and German Institute for Economic Research – DIW Berlin

IMPRESSUM

DIW Berlin
Deutsches Institut für Wirtschaftsforschung
Königin-Luise-Str. 5
14195 Berlin
Tel. +49 (30) 897 89-0
Fax +49 (30) 897 89-200
www.diw.de

ISSN print edition 1433-0210
ISSN electronic edition 1619-4535

Do Eurozone Countries Cheat with their Budget Deficit Forecasts?[1] [2]

Tilman Brück
German Institute for Economic Research (DIW Berlin) and Poverty Research Unit at Sussex (PRUS)

and

Andreas Stephan
European University Viadrina and German Institute for Economic Research (DIW Berlin)

24 May 2005

JEL classifications: H62, H87, C23, C53, E62
Keywords: fiscal policy, budget deficit, forecast error, electoral cycles

Abstract

We estimate the political economy determinants of budget deficit forecast errors. Since the adoption of the Stability Pact, Eurozone governments have manipulated forecasts before elections. The political orientation and the institutional design of governments also affects the quality of forecasts.

---

[1] Corresponding author: Tilman Brück, German Institute for Economic Research (DIW Berlin), Königin-Luise-Str. 5, 14195 Berlin, Germany, Tel: +49-30-89789-591, Fax: +49-30-89789-108, Email: tbrueck@diw.de.

[2] We thank Anne Brunila, Ulrich Fritsche, Chetan Ghate, Andrew Hughes Hallet, and Boriss Siliverstovs for helpful comments and Ina Yaneva for her excellent research assistance. The usual disclaimer applies.

1. Introduction

In this paper, we assess the political, electoral and institutional determinants of the quality of the budget deficit forecasts for Eurozone countries before and after the introduction of the Stability and Growth Pact (SGP). We also check if similar political economy considerations drive the quality of budget deficit forecasts in non-Eurozone economies.

Under the SGP, the European Commission is charged with monitoring the fiscal position of each eurozone country and initiating fines for truants using raw data from national statistical agencies (Buti and van den Noord 2004). The SGP therefore creates incentives for "unobservable fiscal effort" (Beetsma and Jensen 2003) of a malign nature, "creative accounting" (Milesi-Ferretti 2003) or plain cheating with budget deficit forecasts prior to elections (Strauch et al 2004).

Our paper makes three distinct contributions to the political economy analysis of fiscal policy. First, this is the first paper, to our knowledge, that proves the existence of cheating by eurozone governments (compared to other OECD governments) in reporting their budget deficits since the adoption of the SGP prior to elections. Second, we apply panel econometric techniques to the analysis of forecast errors of both eurozone and non-eurozone OECD economies, rather than only considering eurozone economies. Third, we use two forecasts per year which increases the subtlety of our political economy analysis.

2. Hypotheses

We conjecture that the SGP created incentives to induce "political forecast cycles" in Eurozone but not in non-Eurozone countries. As with political budget cycles, there may be electoral, partisan or institutional forecast cycles.

In an *electoral* forecast cycle, a given election date determines a government's spending and taxation plans and the corresponding information policy. For example, a government may increase spending prior to an election and hide the emerging budget deficit until after the election. We hypothesise that under the SGP forthcoming elections induce budget deficit forecast manipulations.

In a *partisan* forecast cycle, cyclical behaviour derives from different preferences of the political parties and their respective voters. The political orientation of a government may affect the quality of its budget deficit forecasts. We hypothesise that left-wing (right-wing) governments pursue employment (price stability) at the expense of price stability (employment) which means that tax revenues are more (less) difficult to forecast.

In an *institutional* forecast cycle, the institutions of governance create incentives for more or less truthful reporting of budget deficit forecasts, as is the case in institutional budget cycles. We hypothesise that moving to a coalition or minority government increases the incentive to cheat for two reasons. First, single-party and majority governments can afford to be unpopular if necessary and still hope to win elections later. Second, they can afford to openly favour their supporters without having to conceal such actions.

3. Method

Let y_t denote the deficit or surplus in period t. The deficit (or surplus) forecast error $e_{t+1,t}$ (measured as share of GDP) is defined as predicted y in t for period $t+1$ minus actual y in $t+1$, thus

$$e_{t+1,t} = y_{t+1,t} - y_{t+1}. \qquad (1)$$

Accordingly, an optimistic forecast (that is an underestimation of the deficit or an overestimation of the surplus) yields a positive value of the forecast error.

A forecast should be unbiased, that is it should have a mean error of zero. Furthermore, a forecast should be rational, that is it should use all available information thus making it impossible to find any other variable which can be used to predict the error.

A basic regression model for testing the rationality of forecasts with a panel of N countries is

$$\begin{aligned} & e_{t+1,it} = \mu_i + \lambda_t + \sum_k \beta_k x_{k,it} + \varepsilon_{it}, \\ & i = 1,\ldots,N; \quad t = 1,\ldots,T; \quad k = 1,\ldots,p; \end{aligned} \tag{2}$$

where μ_i denotes country-specific (intercepts) and λ_t time-specific effects, $x_{k,it}$ are p factors potentially predicting the forecast error, and ε_{it} represents iid random noise with variance σ_i^2.

The unbiasedness of countries' forecasts implies $\mu_i = 0$ for all i. The rationality of forecasts furthermore implies $\lambda_t = \beta_k = 0$.

Due to groupwise heteroscedasticity of error variances in (2), we employ Weighted Least Squares (WLS) for the estimations, where weights are proportional to the reciprocals of country-specific error variances obtained from residuals of a first step OLS regression.

4. Data

Each Spring and Autumn, the European Commission publishes budget deficit forecasts of each member state for the subsequent calendar year (European Commission 1995-2004), which yields two observations for each year for the dependent variable defined in equation (1). To calculate the budget deficit forecast error, we use the first estimate of the actual budget deficits as published in the same source.

We calculate the following political variables (Armingeon et al 2004, Europa Publications 1996-2003):

(i) the number of months till the next legislative election,

(ii) the political orientation of a government as indicated by the election manifestos of the government parties and ranging from very left-wing (negative values) to very right-wing (positive values) orientations,

(iii) a binary variable indicating coalition governments (which take the value one), and

(iv) a binary variable indicating minority governments (which take the value one).

In addition, we define a binary variable taking the value one if a country has joined the stability and growth pact (that is if it is a eurozone country after 1997).

To control for the effects of unobserved macro-economic shocks, we include the GDP forecast error as an explanatory variable. We include as an additional independent variable the error from the Spring forecast in the estimation of the Autumn forecast error. With rational forecasts, we would not expect a correlation of forecast errors across years.

The dataset covers 17 eurozone and non-eurozone countries (EU-15, Japan and the USA) and bi-annual forecasts for these countries published by the Commission from 1995 to 2003. Due to missing values, 249 observations are available in total.

The political orientation of parties is only available till 1998 and extrapolated for subsequent governments based on the latest available election manifestos. For the compilation of the political variables, the publication dates of the Commission Spring and Autumn forecasts served as cut-off dates.

5. Results

Table 1 shows that there are no significant differences in biases of forecast errors between Eurozone and non-Eurozone economies.

We first estimate a model where the coefficients on the political variables can be different for eurozone and non-eurozone countries (model I). We then restrict the sample to the eurozone countries and then test the effects of the political variables before and after the adoption of the SGP (model II).

Both models fit very well, taking into consideration that rational forecasts should not be correlated with any further variable (table 2). We find that the error of the Spring forecasts has predictive power for the Autumn forecast error in all models. Macro-economic shocks, captured by the GDP forecast error variable, are positively correlated with the deficit forecast errors, which is not surprising. The country fixed effects are jointly significant in all models. In particular, Greece and the US have high positive and Luxembourg and Belgium high negative coefficients, indicating that these countries systematically under- and overestimate their budget deficits, respectively.

The regression analysis suggests the following about our hypotheses. First, the introduction of the SGP led to the eurozone governments issuing biased budget definition forecasts prior to elections. While this effect is present only for the Eurozone countries (model I), model II in fact demonstrates that the effect became significant with the introduction of the SGP.

Second, governments moving to the right (left) make more pessimistic (optimistic) forecasts (model I). Model II again demonstrates that the introduction of the SGP made this effect significant for eurozone economies.

Third, coalition governments in eurozone economies do not make unbiased budget deficit forecasts (model I), either before or after the adoption of the SGP (model II). In

contrast, minority governments in eurozone countries only have made overtly optimistic forecasts since the introduction of the SGP (model II).

Our findings extend the empirical literature on political budget cycles to the case of political forecast cycles. In contrast to the literature, we find that contracts like the SGP do have an impact on European fiscal choices (Andrikopoulos et al 2004). Governments faced extra incentives to mislead their electorates. In comparison to the ambiguous results provided by Strauch et al (2004), we present strong evidence on the existence of electoral cycles due to the introduction of the SGP.

6. Conclusion

Our analysis demonstrates the existence of political forecast cycles in Eurozone economies after the adoption of the Stability and Growth Pact. The Pact creates incentives for governments to mislead their electorates about budget deficit forecasts, especially in the run up to elections. The finding calls into question the strong reliance of the Pact on budget deficit forecasts as a key fiscal indicator.

Bibliography

Andrikopoulos, A., I. Loizides and K. Prodromidis (2004). "Fiscal Policy and Political Business Cycles in the EU." *European Journal of Political Economy*. 20: 125-52.

Armingeon, K., P. Leimgruber, M. Beyeler and S. Menegale (2004). Comparative Political Data Set 1960-2002. Berne: Institute of Political Science, University of Berne.

Beetsma, R. and H. Jensen (2003). "Contingent Deficit Sanctions and Moral Hazard with a Stability Pact." *Journal of International Economics*. 61: 187-208.

Buti, M. and P. van den Noord (2004). "Fiscal Policy in EMU: Rules, Discretion and Political Incentives." *Economic Papers European Commission*.

Europa Publications (1996-2003). *Europa World Year Book*. London.

European Commission (1995-2004). *European Economy*. Brussels.

Milesi-Ferretti, G. M. (2003). “Good, Bad or Ugly? On the Effects of Fiscal Rules with Creative Accounting.” *Journal of Public Economics*. 88: 377-94.

Strauch, R., M. Hallerberg and J. von Hagen (2004). "Budgetary Forecasts in Europe - the Track Record of Stability and Convergence Programmes." *ECB Working Paper Series*. Frankfurt.

von Hagen, J. (2003). "Fiscal Discipline and Growth in Euroland: Experiences with the Stability and Growth Pact." *ZEI Working Paper*. Bonn.

Table 1: Descriptive Statistics for Deficit Forecast Errors

Country	No. Obs.	Mean	Std. Dev.
Eurozone countries before 1998	47	-1.002	1.006
Eurozone countries after 1997	134	-0.015	1.616
Non-Eurozone countries	68	0.135	1.866
All countries	249	-0.160	1.643

Table 2: Regression Results (Weighted Least Squares)

Dependent variable: Deficit forecast error	**Model I (all countries)**			**Model II (Eurozone countries)**	
Independent variable	**Estimate**	t-value		**Estimate**	t-value
Spring forecast error	0.140	2.08**		0.125	1.68*
GDP forecast error	0.284	4.05***		0.270	3.62***
Months till election					
non-Eurozone	-0.001	-0.05	1995-1997	-0.006	-0.69
Eurozone	-0.014	-3.39***	1998-2003	-0.016	-3.29***
Political orientation					
non-Eurozone	-0.012	-1.18	1995-1997	-0.009	-0.73
Eurozone	-0.013	-1.71*	1998-2003	-0.016	-1.82*
Coalition government					
non-Eurozone	0.133	0.11	1995-1997	2.049	3.03***
Eurozone	0.746	2.15**	1998-2003	0.761	2.25**
Minority government					
non-Eurozone	-0.377	-0.37	1995-1997	0.980	1.55
Eurozone	0.515	1.06	1998-2003	1.762	3.01***
Austria	-0.146	-0.27		0.033	0.06
Belgium	-0.714	-1.66*		-0.601	-1.37
Denmark	0.680	0.30			
Finland	-0.529	-1.08		-0.416	-0.88
France	0.252	0.62		0.399	0.93
Germany	-0.025	-0.06		0.114	0.26
Greece	0.869	1.66*		1.409	2.92***
Ireland	0.185	0.23		-0.594	-0.74
Italy	0.107	0.23		0.279	0.58
Japan	1.201	0.97			
Luxembourg	-1.839	-3.26***		-1.717	-3.03***
Netherlands	-0.455	-1.04		-0.315	-0.71
Portugal	0.233	0.50		0.305	0.66
Spain	-0.053	-0.18		0.125	0.41
Sweden	-0.341	-0.28			
United Kingdom	0.564	1.11			
USA	2.274	2.48**			
1995	-0.565	-1.78*		-1.905	-2.90***
1996	-0.876	-3.37***		-2.451	-3.72***
1997	-0.899	-2.98***		-2.510	-3.65***
1998	-0.860	-3.27***		-1.117	-3.97***
1999	-1.385	-5.01***		-1.671	-5.54***
2000	-0.466	-1.57		-0.406	-1.31
2001	0.380	1.35		0.259	0.88
2002	0.237	0.84		-0.020	-0.07
R^2	0.6166			0.6681	
Obs.	249			181	
Test for unbiasedness[a]	71.0***			51.0***	

Statistically significant coefficients are indicated by *, **, and *** at 10, 5, and 1 percent level, respectively.

[a]Significance of country effects